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16 UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
17

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19 ILLUMINA, INC. and ILLUMINA
20 CAMBRIDGE LTD.,

21 Plaintiffs,

22
23 v.

24 COMPLETE GENOMICS, INC.,
25

26 Defendant.
27
28

Case No. 3:12-cv-01465-BEN-BGS

**ILLUMINA'S RESPONSIVE
CLAIM CONSTRUCTION BRIEF**

Hon. Roger T. Benitez
Date: July 18, 2013
Time: 9:00 A.M.
Room: 5A

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I. Introduction

The Court should reject CGI's proposed constructions because they violate two fundamental rules of claim construction: CGI improperly limits Claim 1 to cover only the specification's preferred embodiments, and improperly reads limitations from Claim 2 into Claim 1 so as to render the two claims identical.

CGI ignores the express language of Claim 1 and instead construes Claim 1 to cover only preferred embodiments described in the specification. And although the specification recites all of the elements of Claim 2 in the "Summary of the Invention" section, Claim 1 should not be construed to contain all of those elements. The claims, not the specification, define the patent right. The Court should not render Claim 1 meaningless by construing it to be the same as Claim 2.

CGI also says the specification does not support Claim 1 as written because the specification requires a specific method of reading sequence information. That is simply untrue. Contrary to CGI's assertion, the specification expressly states that the invention is *not* limited to using any particular sequencing method.

II. CGI's factual background misleads and omits important facts

CGI makes several misleading statements and omissions in its factual background. First, CGI says that extensive technical background about DNA structure, amplification, and sequencing is important to give context to "the most significant terms in this dispute." (CGI Br. at 1:15–22.) But CGI omits from its factual background any information about sequencing-by-ligation: a sequencing technique expressly disclosed in the '930 patent and which CGI uses in its accused Combinatorial Probe Anchor-Ligation ("cPAL") technology. CGI ignores sequencing-by-ligation

1 completely and tries to create non-infringement arguments by proposing
 2 constructions that exclude its sequencing-by-ligation technology from the
 3 scope of Claim 1. In contrast, we explained sequencing-by-ligation in our
 4 opening brief because the '930 patent expressly says that it is a method of
 5 reading sequence information that can be used in the invention. (Exh. A
 6 at 22:9–17.)

7 Second, CGI claims it will “prevail” “[n]o matter which constructions
 8 the Court adopts.” (CGI Br. at 1–2 n.2.) However, CGI effectively
 9 concedes that under Illumina’s constructions, CGI infringes Claim 1: CGI
 10 says that under its constructions, “CGI does not infringe,” but under
 11 Illumina’s constructions, CGI says only that “Claim 1 is invalid over the
 12 prior art.” (*Id.*) In any event, CGI is wrong on both points: under
 13 Illumina’s proposed constructions, CGI infringes, and Claim 1 is valid.

14 Third, CGI asserts that “[p]airwise sequencing is an old method” and
 15 that the invention of Claim 1 “must be something more than the mere
 16 concept of pairwise sequencing.” (CGI Br. at 6:18, 7:20–22.) A plain
 17 reading of Claim 1—without adding further limitations into the claim as
 18 CGI proposes—shows that it requires more than the “mere concept of
 19 pairwise sequencing.” It is a novel method of pairwise sequencing
 20 because it includes all of the steps recited in the claim. This is why the
 21 Patent Office granted the '930 patent to Illumina. (Exh. F, Apr. 2, 2012
 22 Notice of Allowance at 2–3.)

23 **III. Argument**

24 CGI’s constructions ignore the “‘bedrock principle’ of patent law that
 25 ‘the claims of a patent define the invention to which the patentee is
 26 entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303,
 27 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water, Inc. v. Safari*

1 *Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)).

2 Instead, CGI proposes limiting Claim 1 to the embodiments described in
 3 the “Summary of the Invention” section of the specification. This is
 4 incorrect as a matter of law. *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d
 5 1341, 1348 (Fed. Cir. 2009) (“The claims, not specification embodiments,
 6 define the scope of patent protection.”).

7 **A. “in the same target double stranded polynucleotide”¹**

8 **1. The claim and specification support Illumina’s construction**

9 CGI’s argument that Claim 1 requires both strands of a “template
 10 polynucleotide duplex” to be “linked to the solid support at or near their
 11 5’ ends” ignores the express language of Claim 1. The claim does not say
 12 anything about a solid support, and CGI’s arguments do not justify
 13 adding that limitation to the claim.

14 First, CGI says that Illumina’s construction is “strained” and
 15 “divorced from the teachings of the patent.” (CGI Br. at 12:11–12, 17:23–
 16 24.) It is not: the specification supports Illumina’s construction. In Claim
 17 1, the phrase “same target double stranded polynucleotide” describes the
 18 polynucleotide in which the “first and second regions” for obtaining
 19 sequence information are located. As explained in our opening brief,
 20 those first and second regions must be *single-stranded* at the time of
 21 sequencing, which CGI does not dispute. (Illumina Op. Br. at 13:3–22.)

22 According to the claim, those two single-stranded regions are derived
 23 from the same original double-stranded polynucleotide. In other words,
 24 Claim 1 says the target polynucleotide is double-stranded because the
 25 two regions are on either the same strand *or* on the complementary

26
 27 ¹ In our opening brief, we addressed the claim terms in the order they
 28 appear in Claim 1. In this responsive brief, we will address the claim
 terms in the order CGI addressed them in its opening brief.

1 strands of that target—which CGI also does not dispute. (Exh. A at 5:54–
2 57.) Unlike CGI’s construction, Illumina’s construction explains the term
3 “same target double stranded polynucleotide” without importing any
4 additional limitations into Claim 1 and is consistent with the
5 specification.

6 Second, CGI argues that Illumina’s construction is too broad because
7 it would cover “any” DNA or “even RNA.” (CGI Br. at 12:12–15, 17:17–
8 23.) However, the specification supports a broad interpretation: “[t]he
9 target nucleic acid may be essentially any nucleic acid of known or
10 unknown sequence. It may be, for example, a fragment of genomic DNA
11 or cDNA,” and “the method may also be applied to ribonucleic acid
12 (RNA).” (Exh. A at 6:60–63, 7:5–7.)

13 Third, CGI argues that Illumina’s construction must be wrong
14 because in the specification, “original polynucleotide duplex” always
15 refers to an immobilized duplex. (CGI Br. at 18:9–17.) But CGI cites only
16 preferred embodiments, which do not limit the claim, such as where CGI
17 cites the statement in the specification that “[i]n one embodiment, both
18 strands of the original polynucleotide duplex remain immobilized.” (CGI
19 Br. at 18:14; Exh. A at 3:64–67 (emphasis added).)

20 2. CGI’s construction excludes a preferred embodiment

21 CGI’s construction is also incorrect because it excludes the third
22 preferred embodiment described in the “Summary of the Invention”
23 section of the specification. As CGI acknowledged in its opening brief,
24 this embodiment includes removing one strand from the solid support to
25 provide a single-stranded polynucleotide. The first and second primers
26 are then hybridized and read from the remaining single-stranded
27 polynucleotide. (CGI Br. at 9:7–10; Exh. A at 4:21–24.)
28

CGI construes “same target double stranded polynucleotide” to require that both strands of the double-stranded polynucleotide are attached to a support when hybridizing the second primer. Claim 1 recites that the “second primer” hybridizes to a “different location” in “the same target double stranded polynucleotide.” CGI’s construction therefore requires that both strands are attached to the support when the second primer hybridizes to a “different location” in “the same target double stranded polynucleotide.” But in the third preferred embodiment, only one strand of the polynucleotide remains, so under CGI’s construction, the second primer could never hybridize to a “different location” in “the same target double stranded polynucleotide.”

CGI’s construction requires that both strands are attached when the second primer hybridizes. This excludes the third embodiment in the Summary of the Invention, which removes one strand from the support before hybridizing the second primer. CGI’s construction therefore must be incorrect. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (noting that a construction that excludes a preferred embodiment “is rarely, if ever, correct”).

3. Claim 1 is broader than the preferred embodiments, and there was no disclaimer of scope

CGI asks this Court to limit Claim 1 to cover only the embodiments described in the specification. That would be legal error: if the claim as written is broader than the embodiments, the Court cannot limit the claim to cover only the embodiments unless the patentee demonstrated a “clear intent” to limit the claim scope in that manner. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906–07 (Fed. Cir. 2004) (“Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has

1 demonstrated a clear intention to limit the claim scope using ‘words or
2 expressions of manifest exclusion or restriction.’”) (quoting *Teleflex, Inc.*
3 *v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1327 (Fed. Cir. 2002)).

4 CGI argues that the Court should import limitations from the
5 specification into Claim 1 because those limitations appear in the
6 “Summary of the Invention” preceded by the phrase “according to the
7 invention.” (CGI Br. at 13:1–17.) As cases like *Liebel-Flarsheim* show, if
8 the claims are broader than the embodiments, even limitations described
9 in the specification as part of “the invention” do not limit the claims
10 unless the patentee demonstrated a “clear intent” to limit the claim scope
11 in that manner.

12 In *Liebel-Flarsheim*, the district court construed the claim term
13 “injector” to require a “pressure jacket” (a term not mentioned in the
14 claim) because the abstract, *every* embodiment, *and* the Summary of the
15 Invention described “the invention” as including a pressure jacket. 358
16 F.3d at 908. The Summary of the Invention said that “According to the
17 principles of the present invention, there is provided an angiographic
18 injector having a front end loadable syringe that can be loaded into and
19 removed from the injector pressure jacket through an opening that is
20 provided in the front end of the pressure jacket.” *Id.*

21 The Federal Circuit reversed, holding that a pressure jacket was *not*
22 a required element of the claimed invention: “Absent a clear disclaimer of
23 particular subject matter, the fact that the inventor may have
24 anticipated that the invention would be used in a particular way does not
25 mean that the scope of the invention is limited to that context.” *Id.* at 909
26 (quoting *Northrop Grumman Corp. v. Intel Corp.*, 325 F.3d 1346, 1355
27 (Fed. Cir. 2003)).
28

1 Here, as in *Liebel-Flarsheim*, where the claim was not limited to
2 require a pressure jacket even though the Summary of the Invention
3 referred to a “pressure jacket” as part of “the principles of the present
4 invention,” the fact that the ’930 patent inventors anticipated that their
5 invention could be used with immobilized polynucleotides attached at
6 their 5’ ends does not limit the scope of Claim 1 to that embodiment,
7 absent a “clear disclaimer.” *Liebel-Flarsheim*, 358 F.3d at 909.

8 A “clear disclaimer” can include, for example, criticism of features
9 that would be included under a broad construction coupled with a
10 statement that the limitation is used in “all embodiments of the present
11 invention *contemplated and disclosed* herein.” *Id.* at 906–07 (emphasis
12 added) (quoting *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys.,*
13 *Inc.*, 242 F.3d 1337, 1344 (Fed. Cir. 2001)).

14 CGI has not identified a clear disclaimer of claim scope in the ’930
15 specification. As we explained in our opening brief, the ’930 specification
16 contains no such disclaimer. To the contrary, it expressly contemplates
17 alternative embodiments that would be excluded by CGI’s proposed
18 construction. (Illumina Op. Br. at 16:20–17:23.) For example, the
19 Summary of the Invention says that the “inventors have developed a
20 method for . . . sequencing of double-stranded polynucleotide templates,
21 *including* double-stranded templates present on clustered arrays, such as
22 those described herein.” (Exh. A at 3:20–23 (emphasis added).) But the
23 patent never says the method is *limited* to double-stranded templates on
24 clustered arrays.

25 The cases CGI cites to support limiting Claim 1 to the embodiments
26 described in the Summary of the Invention are different than the facts
27 here. Attaching a double-stranded polynucleotide to a solid support is *not*
28

required by “clear implication of the claim language.” *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004). Nor does the Summary of the Invention describe attachment to a solid support as necessary to accomplish the “general object of the present invention.” *Morvil Technology, LLC v. Medtronic Ablation Frontiers, LLC*, 2012 WL 3277272, at *16 (S.D. Cal. Aug. 10, 2012). And the ’930 patent does not define the phrase “in the same target double stranded polynucleotide,” much less “explicitly define” it as being attached to a solid support. *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 864 (Fed. Cir. 2004) (limiting claim where term “plug” was “defined globally as requiring a pleated surface”).

4. CGI’s argument violates the doctrine of claim differentiation, calling for Claim 1 to be the same as Claim 2

CGI argues that Claim 1 must be limited to embodiments described in the Summary of the Invention. (CGI Br. at 13:1–17.) This would require the Court to construe Claim 1 to be exactly the same as Claim 2. In the ’930 patent, the Summary of the Invention recites *all* of the elements of Claim 2 (*i.e.*, steps (a) through (g)). (Exh. A at 3:32–63.) Therefore, if Claim 1 is limited to the elements listed in the Summary of the Invention, Claim 1 would be exactly the same as Claim 2. The Court should not incorporate those limitations into Claim 1 because doing so would violate the presumption of claim differentiation. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (*en banc*). (*See also* Illumina Op. Br. at 17:24–18:7.)

5. The prosecution history supports Illumina’s construction, not CGI’s

CGI contends that the prosecution history “undermines” Illumina’s construction because when Illumina filed a preliminary amendment to

1 add Claim 1, Illumina only cited Claim 2 for support. This is not true. In
2 fact, Illumina said that support for Claim 1 (application claim 27) “is
3 found *throughout the specification* and in the original claims.” ((Exh. G,
4 Aug. 7, 2008 Preliminary Amendment at 8.)

5 Rather than undermine Illumina’s construction, the preliminary
6 amendment actually supports that construction. Illumina’s preliminary
7 amendment adding Claim 1 is evidence that Claim 1 does *not* require
8 attachment of the polynucleotide to a surface. Illumina added Claim 1 of
9 the ’930 patent (application claim 27), which does *not* require the
10 polynucleotide to be immobilized or attached, when all of the other claims
11 required the polynucleotide to be either “immobilized” or “attached” to a
12 surface. (Exh. G at 3–7.) This amendment adding a claim that does *not*
13 require attachment is a “strong indication that the applicants intended”
14 the added Claim 1 to *not* require attachment. *Liebel-Flarsheim*, 358 F.3d
15 at 909 (amendment of claims during prosecution was evidence of
16 intention to omit claim elements).

17 Finally, as explained in our opening brief, *both* the examiner’s
18 treatment of Claim 1 and Illumina’s statements throughout prosecution
19 are further evidence that Claim 1 does not require attachment of the
20 polynucleotide to a solid support. (Illumina Op. Br. at 18:8–19:18.)

21 **6. Attachment to a solid support is not “crucial” to claim 1**

22 CGI claims that the “purpose” of the invention “drives the
23 attachment requirement,” which is “crucial to the invention.” (CGI Br. at
24 15:11–16.) CGI’s assertion that “the invention would not work” without
25 “both strands attached to the solid support” is merely attorney argument.
26 (*Id.* at 15:15–16.) As discussed above, it is inconsistent with the third
27 embodiment described in the Summary of the Invention, where one of the
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two strands is removed before reading and hybridizing. (Exh. A at 4:16–24.) Therefore, the “strands” need not “survive denaturation and remain bound to solid support” as CGI contends. (CGI Br. at 15:21–22.)

The “purpose” of the invention is to obtain two reads of sequence information according to the steps set forth in Claim 1. The purpose is *not* to bind DNA to a solid support. In contrast to CGI’s unsupported attorney argument, the examiner at the Patent Office understood that Claim 1 does *not* require attachment to a solid support. (Illumina Op. Br. at 18:8–19:18.)²

7. The testimony of the inventors adds nothing to CGI’s argument

CGI relies on inventor testimony to explain the preferred embodiments described in the Summary of the Invention. (CGI Br. at 15:25–17:10.) But in this testimony, the inventors simply reiterated what the specification says about those embodiments; their testimony was not about the proper scope of Claim 1 (which in any event is a legal question for the Court, not the inventors). *Howmedica Osteonics Corp. v. Wright Med. Tech.*, 540 F.3d 1337, 1347 (Fed. Cir. 2008) (inventors are not qualified to testify about the scope of claims).

B. “reading from a [first/second] primer”

1. CGI disregards the specification

CGI’s argument that “reading” requires sequencing-by-synthesis directly contradicts the express statement in the specification that the

²To the extent CGI argues that Claim 1 would be invalid under Illumina’s construction, this is not a proper inquiry for claim construction. The issue now is the proper construction of the terms in Claim 1. The question is not whether the claim, properly construed, is enabled or has sufficient written descriptive support. That is an issue for the Court to decide later, if CGI challenges the validity of Claim 1 after the Court construes the claim.

1 “methods of the invention *are not limited to* use of the sequencing method
 2 [sequencing-by-synthesis] outlined above.” (Exh. A at 22:9–10 (emphasis
 3 added).) Instead, the methods of the invention “can be used in
 4 conjunction with essentially any sequencing methodology which relies on
 5 successive incorporation of nucleotides into a polynucleotide chain.” (*Id.*
 6 at 22:10–13.) “Suitable techniques include, for example,
 7 Pyrosequencing™, FISSEQ . . . , MPSS . . . and *sequencing by ligation*-
 8 based methods, for example as described in U.S. Pat. No. 6,306,597.” (*Id.*
 9 at 22:13–17 (emphasis added).) (*See also* Illumina Op. Br. at 20:26–22:2.)

10 2. Illumina’s construction is not ambiguous

11 CGI argues that the term “near” is “impermissibly vague.” (CGI Br.
 12 at 22:25.) It is not. Rather, “near” will explain to the jury what it means
 13 to read “from” a primer. Although CGI criticizes Illumina’s construction,
 14 CGI makes no effort to define what “from” a primer means, instead using
 15 the term “from” in its proposed construction. Illumina’s proposed
 16 construction is necessary because the jury may not understand what it
 17 means to read sequencing information “from” a primer.

18 CGI argues that “reading from” means that “[n]ucleotides are added
 19 directly *into* the primer,” (CGI Br. at 23:7–9), and that the nature of each
 20 nucleotide is determined after each incorporation (CGI Br. at 19:3–6).
 21 The specification, however, teaches that every base need not be
 22 determined, and determining the identity of every base after
 23 incorporation is not required. According to the ’930 patent, the bases to
 24 be read “do not, however, need to be contiguous, nor does every base on
 25 the entire fragment have to be sequenced.” (Exh. A at 6:46–48.) In other
 26 words, the specification does not require determining the identity of the
 27 base immediately contiguous to the primer, or every base adjacent to the
 28 primer. And reading does not require “determination of the nature of the

1 nucleotide after each incorporation,” a step which the specification refers
2 to as merely a “particular embodiment.” (Exh. A at 21:36–38.) Thus,
3 “reading from a primer” only means sequence information must be
4 obtained near the primer.

5 In view of these teachings in the specification, “near” will help the
6 jury understand the claim term, while not incorporating unwarranted
7 limitations into the claim. *See Young v. Lumenis, Inc.*, 492 F.3d 1336,
8 1346 (Fed. Cir. 2007) (finding “near” to be sufficiently definite where a
9 person of ordinary skill would understand the term).

10 In view of the specification, a person of ordinary skill in the art
11 would understand what “obtaining sequence information near where the
12 primer has hybridized” means. Although reading is not limited to any
13 particular method of obtaining sequence information, all of the methods
14 identified in the specification were previously known methods of reading
15 sequence information that a person of ordinary skill would understand.
16 (Exh. A at 22:13–17.) Because these methods do not necessarily
17 determine the nature of every nucleotide adjacent to the primer, the term
18 “near” the primer properly defines the scope of the claim.

19 **C. The Court should not construe “removing the first primer”**

20 The jury will understand what “removing the first primer” means
21 without any construction of the phrase. CGI’s proposal that “removing”
22 means “denaturing” will only confuse the jury by substituting a scientific
23 term in place of a common word. CGI says that its construction of
24 “removing” includes both the “means of removal” and the “timing of
25 removal.” (CGI Br. at 24:11–12.) But “removing the first primer” implies
26 nothing about the means or timing of removal. Instead, CGI once again
27 attempts to add limitations into Claim 1 that are not in the claim.

28 CGI asserts that “a patentee cannot avoid defining its own claim

term by asserting only that its term has a plain meaning.” (CGI Br. at 25:12–13.) CGI cites virtually no authority for this proposition. The first case CGI cites addresses a show-cause order where both parties failed to follow the court’s order regarding the claim-construction process. *Liebel-Flarsheim Co. v. Medrad Inc.*, 2006 WL 335846, at *6 (S.D. Ohio Feb. 14, 2006). The second “case” CGI cites is not an opinion at all, but rather the claim-construction brief of a patent-infringement defendant that itself does not cite any authority. *Ronald A. Smith & Assocs. v. Hutchinson Tech. Inc.*, 2002 WL 34691122, at *1 (N.D. Cal. Aug. 16, 2002) (memorandum of law).

In contrast, we cited two district court cases in our opening brief where courts (including this Court) refused to construe claim terms because the terms had a plain-and-ordinary meaning. (Illumina’s Op. Br. at 22:18–24.) And the Federal Circuit has routinely held that courts should not construe every claim term where the terms have a plain-and-ordinary meaning the jury will readily understand. *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1367–68 (Fed. Cir. 2012) (reversing district court’s construction of “attached” because it “should be given its plain and ordinary meaning”); *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1206–07 (Fed. Cir. 2010) (declining to construe “addressed to a client” and instead adopting its “plain and ordinary meaning”).

D. “first and second regions”

1. CGI attempts to construe “first and second regions” to include overlapping regions

The parties dispute whether “first and second regions” must be merely “distinct” or “distinct and separate.” In its brief, CGI says that “distinct” is the correct construction because that term encompasses

1 overlapping regions. CGI cites little support for its counterintuitive
2 argument that “distinct” regions can overlap.

3 CGI says only that the Abstract refers to the two regions as “distinct
4 and separate.” In fact, this phrase appears twice in the patent, both in
5 the Abstract and in the Field of the Invention. (Exh. A at Abstract &
6 1:22.) The specification also explains that the two regions are separate:
7 “The method provides . . . two regions of sequence . . . linked within a
8 certain distance of each other.” (Exh. A at 22:30–34.) This description
9 makes clear that the two regions are separate.

10 Nothing in the specification says the two regions can overlap,
11 undermining CGI’s argument that the Abstract “contradicts the entirety
12 of the specification.” (CGI Br. at 28:10.) Instead, the specification is
13 consistent with the two regions being distinct and separate. CGI points to
14 Figure 1 to argue that the two regions could, in theory, overlap, but fails
15 to cite any embodiment described in the specification where the regions
16 do overlap. Figure 1 does not illustrate overlapping regions. The fact that
17 the polynucleotide to be sequenced may be between 50 and 1500 base
18 pairs (Exh. A at 7:61) does not mean that two reads of 25 bases, from
19 primers of 10 bases, will overlap.

20 Finally, the testimony of Dr. Barnes is irrelevant. (CGI Br. at 27
21 n.12.) Dr. Barnes did not testify about the meaning of Claim 1, but rather
22 “pairwise” sequencing generally. Moments after giving the testimony CGI
23 cites, Dr. Barnes testified that if reads overlap, they are *not* paired reads.
24 (Exh. H at 118:13–16.) In any event, inventor testimony should be
25 accorded little weight because, as in this instance, inventors are not
26 qualified to testify to “the ultimate scope of the claims . . . after allowance
27 by the PTO.” *Howmedica Osteonics Corp. v. Wright Med. Tech.*, 540 F.3d
28 1337, 1347 (Fed. Cir. 2008).

